

**AMENDMENTS TO THE CLAIMS**

Please **CANCEL** claims 3 and 8 without prejudice or disclaimer of the subject matter therein.

Please **AMEND** claims 1-2, 4-7, and 9-17 as shown below; claims 13-16 have been renumbered to claims 14-17 by the Examiner in accordance with 37 CFR 1.126 and are marked to represent the renumbering below.

The following is a complete list of all claims in this application.

**What is claimed is:**

1. (Amended) An abrasive carbon foam produced by ~~the~~ controlled foaming of a blend of materials, comprising:
  - A) ~~from~~ about 90 to about 99% by volume of a particulate coal exhibiting a free swell index ranging from ~~of between~~ about 3.5 ~~and to~~ about 5.0 ~~and of a small diameter~~; and
  - B) ~~from~~ about 1 to about 10% by volume of a carbide precursor powder capable of reacting with carbon during carbonation and graphitization.
2. (Amended) The abrasive carbon foam produced by controlled foaming a blend of materials of claim 1, wherein said particulate coal exhibits a free swell index ranging from ~~of between~~ about 3.75 ~~and to~~ about 4.5.
3. (Cancelled)

4. (Amended) The abrasive carbon foam produced by controlled foaming a blend of materials of claim 32, wherein said carbide precursor powder includes at least at least one of ~~is selected from the group consisting of:~~ tungsten, silicon and titanium.
5. (Amended) The abrasive carbon foam produced by controlled foaming a blend of materials of claim 32, wherein said carbide precursor powder ~~is of a~~ has particle size sizes below about 100 microns.
6. (Amended) The abrasive carbon foam produced by controlled foaming a blend of materials of claim 32, wherein the abrasive carbon foam ~~is which is~~ a semi-crystalline, largely isotropic, porous coal-based product having a density ranging from ~~of between~~ about 0.1 ~~and to~~ about 0.8 ~~g/cm<sup>3</sup>~~ g/cm<sup>3</sup>.
7. (Amended) A method for producing an abrasive carbon foam, comprising:
  - A) comminuting coal exhibiting a free swell index ranging ~~from of between~~ about 3.5 ~~and to~~ about 5.0 ~~to a small particle size~~ to form a particulate coal;
  - B) blending said particulate coal with ~~from~~ about 1 to about 10% by volume of a carbide precursor powder to form a reactive blend; and
  - C) controllably heating said reactive blend in a mold under a non-oxidizing atmosphere to a first temperature ranging ~~of between~~ about 300° C and about 600° C and soaking at this temperature for a period ranging from about ~~of from~~

~~about~~ 10 minutes to about 12 hours to form a ~~green foam blend~~ an open celled material;

D) carbonizing said ~~green foam open celled material~~ blend to form a ~~carbonized foam~~ by heating to a second temperature ranging from ~~of between~~ about 600°C ~~to and~~ about 1600°C in an inert atmosphere and holding at said second temperature for a period ranging from ~~of from~~ about 1 to about 3 hours to form a carbonized foam; and

E) graphitizing said carbonized foam by heating said carbonized foam to a third temperature ranging from ~~of between~~ about 1700°C ~~and to~~ about 3000°C in an inert atmosphere and holding at said third temperature for a period of less than about one hour to form said abrasive carbon foam.

8. (Cancelled)

9. (Amended) The method for producing an abrasive carbon foam of claim 87, wherein said carbide precursor powder is selected from the group consisting of: tungsten, silicon and titanium.

10. (Amended) The method for producing an abrasive carbon foam of claim 87, wherein said carbon precursor powder ~~is of~~ has a particle ~~size~~ sizes below about 100 microns.

11. (Amended) The method for producing an abrasive carbon foam of claim 7, wherein said particulate coal exhibits a free swell index ranging from ~~of between~~ about 3.75 ~~and to~~ about 4.5.

12. (Amended) An abrasive carbon foam manufactured by a process, comprising:

A) comminuting coal exhibiting a free swell index ranging from ~~of between~~ about 3.5 ~~and to~~ about 5.0 ~~to a small particle size to~~ form a particulate coal;

B) blending said particulate coal with from about 1 to about 10% by volume of a carbide precursor to form a reactive blend;

C) heating said reactive blend in a mold under a non-oxidizing atmosphere to a first temperature ranging from ~~of between~~ about 300° C ~~and to~~ about 600° C at a heat up rate ranging from about 1° C to about 20° C and soaking holding at this the first temperature for a period ranging from about ~~of from about~~ 10 minutes to about 12 hours to form a green foam blend;

controllably cooling said green foam blend to a second temperature below about 100° C;

D) carbonizing said green foam blend to form a carbonized foam by heating to a third temperature ranging from ~~of between~~ about 600°C to ~~and~~ about 1600°C in an inert atmosphere and holding at said third temperature for a period ranging from ~~of from~~ about 1 hour to about 3 hours to form a carbonized foam; and

E) graphitizing said carbonized foam by heating said carbonized foam to a fourth temperature ranging from ~~of between~~ about 1700° C to ~~and~~ about 3000° C

in an inert atmosphere and holding at said fourth temperature for a period of less than about one hour to form said abrasive carbon foam.

13. (Amended) The abrasive carbon abrasive foam manufactured by a process of claim 12, wherein said particulate coal exhibits a free swell index ranging from ~~of~~ between about 3.75 ~~and~~ to about 4.5.
14. (Original duplicate claim 13, renumbered 14, Amended) The abrasive carbon foam manufactured by a process of claim 12, wherein said carbide precursor comprises:  
a member selected from the group consisting of materials capable of reacting with carbon to form carbides ~~under carbon during~~ calcining and graphitizing ~~conditions~~.
15. (Original claim 14, renumbered 15, Amended) The abrasive carbon foam manufactured by a process of claim ~~13~~14, wherein said carbide precursor is selected from the group consisting of: tungsten, silicon and titanium.
16. (Original claim 15, renumbered 16, Amended) The abrasive carbon foam manufactured by a process of claim 12, wherein said carbon precursor is a powder ~~is of~~ having a particle size below about 100 microns.
17. (Original claim 16, renumbered 17, Amended) The abrasive carbon foam manufactured by a process of claim 12, ~~which is~~ wherein the abrasive carbon

foam is a semi-crystalline, largely isotropic, porous coal-based product having a density ranging from ~~of between~~ about 0.1 ~~and to~~ about 0.8 ~~g/cm<sup>3</sup>~~ g/cm<sup>3</sup>.